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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/552,387

10/07/2005

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EXAMINER

PILKINGTON, JAMES

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/552,387	<b>Applicant(s)</b> INOSE ET AL.	
	<b>Examiner</b> JAMES PILKINGTON	<b>Art Unit</b> 3656	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1 and 3-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the wall portion supporting the first bearings must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. The Applicant defines the wall portion as 49 which is shown supporting only one of the first bearings not "the first bearings" (in reference to the pair) as stated in claim 4.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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### ***Specification***

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### ***Claim Objections***

3. Claims 1, 3 and 15 are objected to because of the following informalities:
- Claim 1, remove the word "both" from the last line of the claim
  - Claim 3, "the second bearings" should be - - the first bearings- - since claim 1 defines the power transmission device being between the first bearings
  - Claim 15, remove "and rotatably supported" from the end of the claim

Appropriate correction is required.

Claim 7, lines 2-3 are objected as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel or amend these lines.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 3-7 rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi (PGPUB: US 2002/0078792 A1).

Re clms 1 and 3-5 Kobayashi discloses a support structure comprising:

- an input shaft (31a) and an output shaft (35) for input and output of driving force;
- the input shaft (31a) and the output shaft (35) being coupled by a power transmission (32/33);
- a pair of first bearings (ball bearing and one of the roller bearings on 31a) aligned in an axial direction, the first bearings rotatably supporting the input shaft (31a), the first bearings having the power transmission device (gear 32) disposed therebetween ;
- a pair of second bearings (ball bearings on 35) aligned in an axial direction, the second bearings rotatably supporting the output shaft (35)
- a housing member (casing) for housing the input shaft (31a), the output shaft (35), the first bearings, the second bearings, the power transmission device (32/33) and the change-direction transmission device (30/31), the housing member including a main body (9 and insert around roller bearings of shaft 31a) which supports one of the first bearings and one of the second bearings

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- the power transmission device (gear 32) is disposed so as to respectively abut shaft side members (inner races of the roller bearing and ball bearing) of the pair of the first bearings
- the main body comprises a wall portion (insert of 9 holding bearings) one of the first bearings is rotatably supported by the wall portion
- the wall portion (insert of 9 holding bearings) further comprises an opening (Fig 1), and the input shaft (31a) penetrates the opening so as to be coupled with the output shaft (35)

Re clms 6 and 7, Kobayashi discloses a *gear mechanism*:

- a change-direction gear set (30/31) to change a rotation direction of a driving force at a right angle, the change-direction gear set (30/31) comprising a first change-direction gear (30) and a second change-direction gear (31)
- an input shaft (31a) rotating coaxially and integrally with the second change-direction gear (31)
- an output shaft (35) disposed in parallel with the input shaft (31a)
- a power transmission (32/33) device coupling the input shaft (31a) with the output shaft (35);
- a pair of first bearings (ball bearing and one of the roller bearings on 31a) aligned in an axial direction, the first bearings rotatably supporting the input shaft (31a), the first bearings having the power transmission device (gear 32) disposed therebetween ;

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- a pair of second bearings (ball bearings on 35) aligned in an axial direction, the second bearings rotatably supporting the output shaft (35)
- a pair of third bearings (roller bearings on 26R/34) rotatably supporting the first change-direction gear (30)
- a housing member (casing) for housing the input shaft (31a), the output shaft (35), the first bearings, the second bearings, the third bearings and the power transmission device (32/33), the housing member including a first housing member (9 and insert around tapered bearings of shaft 31a), a second housing member (below 9 and the insert in Figure 1), and a third housing member (to the left of 9 in Figure 1, holding differential), the first housing member which supports one of the first bearings, one of the second bearings and one of the third bearings
- another of the pair of the first bearings and another of the pair of the second bearings are housed in the second housing member (lower ball bearings), and another of the pair of the third bearings is housed in the third housing member (roller bearing on 26R).

6. Claims 8, 10, 11, 14, and 15, rejected under 35 U.S.C. 102(b) as being anticipated by Hideyo (PUB: JP 59-069553).

Re clms 8, 10, 11, 14 and 15 Hideyo discloses a gear mechanism comprising:

- a change-direction gear set (6) to change a rotation direction of a driving force at a right angle, the change-direction gear set (6) comprising a first change-

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- direction gear (vertical gear) and a second change-direction gear (horizontal gear);
- a first gear (7) rotating coaxially and integrally with the second change-direction gear
  - a second gear (8) disposed in parallel with and engaged with the first gear (7)
  - a third gear (9) disposed in parallel with and engaged with the second gear (8)
  - a casing (see Fig 1) housing the change-direction gear set (6), the first gear (7), the second gear (8) and the third gear (9), the casing including a main body (hatched structure in Fig 1) which rotatably supports the change-direction gear set (6), the first gear (7), the second gear (8) and the third gear (9), and covers (below 9 and at each end of the shaft supporting the horizontal gear of the change-direction set) for covering the main body so as to house the change-direction gear set (6), the first gear (7), the second gear (8) and the third gear (9) in the casing
  - a pair of bearings (on shaft supporting horizontal gear) wherein the first gear (7) is disposed between the pair of the bearings
  - the first gear (7) is smaller in diameter than the bearings (see Fig 1)
  - the first and the second change-direction gears (6) are rotatably supported by a pair of bearings receiving force in an axial direction (see Fig 1)
  - the first gear (7) is disposed between a pair of bearings rotatably supporting the second change-direction gear (see Fig 1)



***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hideyo (PUB: JP 59-069553) in view of Kobayashi (PGPUB: US 2002/0078792 A1).

Hideyo discloses all of the claimed subject matter as applied above.

Hideyo does not disclose a first change-direction gear coupled with an output of a transmission of a vehicle to transmit the output to the third gear, and a seal to prevent intrusion of oil in the transmission.

Kobayashi teaches a first change-direction gear (30) coupled with an output of a transmission of a vehicle and a seal (27) to prevent intrusion of oil in the transmission.

It would have been obvious to one skilled in the art at the time of the invention was made to modify Hideyo with a first change-direction gear coupled with an output of a transmission of a vehicle to transmit the output to the third gear, and a seal to prevent intrusion of oil in the transmission, as taught by Kobayashi, for the purpose of providing better control in the transfer of speed and torque.

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9. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hideyo (PUB: JP 59-069553) in view of Palazzolo (US-PAT-NO: 6,605,018 B2).

Hideyo discloses all of the claimed subject matter as applied above.

Hideyo does not disclose a plane formed by a rotation axis of the first gear and a rotation axis of the second gear and another plane formed by the rotation axis of the second gear and a rotation axis of the third gear form an angle smaller than 180 degrees and the rotation axis of the third gear is disposed in a direction away from the rotation axis of the first change-direction gear, the second gear and the third gear are disposed offset in respective perpendicular directions relative to the a rotation axis of a power transmission member coupled with the first change-direction gear, a rotation axis of the first gear is disposed offset in a direction away from the first change-direction gear, a rotation axis of the second gear is disposed offset in a direction closer to the first change-direction gear than the rotation axis of the first gear, and a rotation axis of the third gear is disposed offset in a direction more distant from the first change-direction gear than the second gear.

Palazzolo teaches a plane formed by a rotation axis of the first gear (see at least Fig 1A and 1B item 40) and a rotation axis of the second gear (see at least Figs 1A and 1B item 38) and another plane formed by the rotation axis of the second gear (see at least Figs 1A and 1B item 38) and a rotation axis of the third gear (see at least Figs 1A and 1B item 28) form an angle smaller than 180 degrees and the rotation axis of the third gear is disposed in a direction away from the rotation axis of the first change-direction gear (see at least Figs 1A and 1B item 56), the second gear and the third gear

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are disposed offset in respective perpendicular directions relative to the a rotation axis of a power transmission member coupled with the first change-direction gear (see at least Fig 1B), a rotation axis of the first gear is disposed offset in a direction away from the first change-direction gear (see at least Fig 1B), a rotation axis of the second gear is disposed offset (see at least Fig 1B) in a direction closer to the first change-direction gear than the rotation axis of the first gear, and a rotation axis of the third gear is disposed offset in a direction more distant from the first change-direction gear than the second gear (see at least Fig 1B).

It would have been obvious to one skilled in the art at the time of the invention was made to modify Hideyo and provide a plane formed by a rotation axis of the first gear and a rotation axis of the second gear and another plane formed by the rotation axis of the second gear and a rotation axis of the third gear form an angle smaller than 180 degrees and the rotation axis of the third gear is disposed in a direction away from the rotation axis of the first change-direction gear, the second gear and the third gear are disposed offset in respective perpendicular directions relative to the a rotation axis of a power transmission member coupled with the first change-direction gear, a rotation axis of the first gear is disposed offset in a direction away from the first change-direction gear, a rotation axis of the second gear is disposed offset in a direction closer to the first change-direction gear than the rotation axis of the first gear, and a rotation axis of the third gear is disposed offset in a direction more distant from the first change-direction gear than the second gear, as taught by Palazzolo, for the purpose of allowing more space additional elements (C2/L16-29).

10. Claim 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Hideyo (PUB: JP 59-069553) in view of Tsukasa (PUB: JP 04-203659).

Hideyo discloses all of the claimed subject matter as applied above.

Hideyo does not disclose at least any one of the first change-direction gear and the second change-direction gear comprises a regulation device (see at least Fig 1 item 68) for regulating tooth contact and pressure of the change-direction gear set by changing an axial direction.

Tsukasa teaches a change-direction gear comprising a regulation device (see at least Fig 1 item 68) for regulating tooth contact and pressure of the change-direction gear set by changing an axial direction.

It would have been obvious to one skilled in the art at the time of the invention was made to modify Hideyo with at least any one of the first change-direction gear and the second change-direction gear comprises a regulation device (see at least Fig 1 item 68) for regulating tooth contact and pressure of the change-direction gear set by changing an axial direction, as taught by Tsukasa, for the purpose of regulating a position in the axial direction of the gearing (Tsukasa abstract).

11. Claim 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Hideyo (PUB: JP 59-069553) in view of Miller (US-PAT-NO: US 4,286,481 A).

Hideyo discloses all of the claimed subject matter as applied above.

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Hideyo does not disclose that the bearings are selected from the group of cylindrical roller bearings or needle roller bearings.

Miller teaches a bearings that are selected from the group of cylindrical roller bearings and needle roller bearings (see reference character 28) in a transmission system.

It would have been obvious to one skilled in the art at the time of the invention was made to modify Hideyo and provide for the bearings being selected from a group of cylindrical roller bearings and needle roller bearings, as taught by Miller, since substituting one type of bearing for another is known in the art in order to provide a suitable bearing (*e.g.*, ball bearings, roller bearings, thrust bearings, etc) based on the force and speed which they require to support.

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hideyo (PUB: JP 59-069553) in view of Miller (US-PAT-NO: US 4,286,481 A), and further in view of Hickey et al. (US-PAT-NO: US 4,283,963).

Hideyo in view of Miller discloses all of the claimed subject matter as applied above.

Hideyo in view of Miller does not disclose a positioning device configured to position the roller bearings in an axial direction.

Hickey teaches a positioning device configured to position the roller bearings in an axial direction (60) for the purpose of adjusting the axial position of the bearing (C4/L23-38).

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It would have been obvious to one skilled in the art at the time of the invention was made to modify Hideyo in view of Miller and provide a positioning device configured to position the roller bearings in an axial direction, as taught by Hickey, for the purpose of adjust the axial position of the bearing.

13. Claim 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Hideyo (PUB: JP 59-069553) in view of Yokel (US-PAT-NO: US 3,803,934).

Hideyo discloses all of the claimed subject matter as applied above.

Hideyo does not disclose that one of the first-third gears are helical gears.

Yokel teaches that helical gears can be used in a power transmission system for the purpose of providing a system where the gears can be made with less under-cut and more width across the top rear side so that it can transmit higher loads (C1/L51-55). It would have been obvious to one skilled in the art at the time of the invention was made to modify Hideyo and provide helical gear teeth, as taught by Yokel, for the purpose of providing a system where the gears can be made with less under-cut and more width across the top rear side so that it can transmit higher loads.

### ***Response to Arguments***

14. Applicant's arguments filed 8/12/08 have been fully considered but they are not persuasive.

15. Re claims 1, 6 and 8, the Applicant argues that neither Kobayashi nor Hideyo disclose a main body which houses the components.

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Both Kobayashi and Hideyo do indeed disclose a casing/housing with a main body housing the components as claimed in claims 1, 6 and 8. Claims 1, 6 and 8 do not define any particular structure which makes up the main body or how the main body supports the internal structure.

As broadly defined Kobayashi (Claims 1 and 6) discloses a main body which is made up of casing 9 and an insert member which holds the roller bearings for shaft 31a. This is a two part main body with which all of the components being claimed are internal to or project into. This structure meets the limitations of the claims as applied above.

With respect to Hideyo Figure 1 there is a casing which has a multiple part main body. The multiple part main body is made up of housing of 2, reference numeral 1, the covers and casing above reference numeral 1 and the covers (the main body is better described as the cross-hatched structure in Figure 1). All of these components make up the casing and support the internal components as claimed in claim 8.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES PILKINGTON whose telephone number is (571)272-5052. The examiner can normally be reached on Monday - Friday 7-3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JAMES PILKINGTON/  
Examiner, Art Unit 3656  
11/12/08

/Richard WL Ridley/  
Supervisory Patent Examiner, Art Unit 3656



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